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20 June 1966

No. 1580/66

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INTELLIGENCE MEMORANDUM

AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM
(THROUGH 14 JUNE)

DIRECTORATE OF INTELLIGENCE

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No. 1580/66

CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
20 June 1966

INTELLIGENCE MEMORANDUM*

An Appraisal of the Bombing of North Vietnam
(Through 14 June)

SUMMARY

During May and early June 1966, air strikes against North Vietnam were concentrated in the area south of Hanoi, with some strikes in the northeast area. Although seriously hampered by inclement weather during most of the period, air strikes against the transportation systems were both numerous and diversified, with heavy emphasis on trucks, rolling stock, and waterway craft. More freight cars and waterway craft were reported damaged or destroyed than in any previous comparable period. The ratio of reported destroyed/damaged trucks to reported sightings improved from one to five in February to one to two in May. Sufficient time has elapsed for the temporary repair or bypass of destroyed bridges, and we believe that normal service has probably been restored on the important rail lines in North Vietnam.

The North Vietnamese have continued their restoration and construction work on the lines of communication (LOCs) at high levels and they retain the capability of meeting their logistic requirements for operations in Laos and South Vietnam. Although the capacity to move supplies by trucks has not been appreciably reduced during this period, it has become more difficult to move supplies and more

*This memorandum is the Central Intelligence Agency's issuance of a joint Central Intelligence Agency - Defense Intelligence Agency study prepared monthly.

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costly to maintain the LOCs because of the extensive strikes on bridges, ferries, and fords.

The continuing air strikes still do not appear to have had a serious effect on the NVN leadership's resolve to press on with the war. Despite growing hardships, there are continuing indications that the popular will to resist is holding up rather well.

The cumulative effects of the bombing are proving increasingly detrimental to the performance of the North Vietnamese economy despite the restriction of US/GVN air strikes to targets of relatively limited economic significance and value. Unusually large amounts of economic resources are being channeled into construction and maintenance in the transportation system. This diversion undoubtedly contributed significantly to the lower rates of growth shown by agriculture and industry during 1965, and will probably continue to do so if continued in 1966. The agricultural sector of the economy in particular appears to be adversely affected by the reallocation of resources. Exports of coal by sea in May were less than 40 percent of the average monthly volume in the first quarter of 1966. Direct measurable losses to economic and military facilities and equipment caused by air strikes are now estimated at some \$72 million.* Measurable indirect losses amount to about \$11.5 million. In addition, there are other losses and costs to the economy and the military establishment that have developed as a consequence of the air strikes but to which values cannot be assigned.

*US dollars are used throughout this memorandum.

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Effects on Military Targets

1. During May and early June 1966, air strikes against North Vietnam were concentrated in the area south of Hanoi, with some strikes in the northeast area. Although seriously hampered by inclement weather during most of the month, air strikes against the transportation systems of North Vietnam were both numerous and diversified. Especially noteworthy was the heavy emphasis on trucks, rolling stock, and waterway craft. More freight cars and waterway craft were reported damaged or destroyed than in any previous comparable period. There were, however, only half as many road cuts or cratered segments in May as there were in April. Four of the five major rail lines were struck in May whereas all lines were struck in April. Emphasis on transportation equipment has continued in early June.

2. In May, at least 400 vehicles were reported sighted by pilots over assigned mission routes, of which nearly 200 were reported destroyed or damaged, representing a ratio of destroyed/damaged to sighting of approximately one to two. This ratio has steadily improved from one to five in February to the one to two ratio in May. Heavy vehicle losses continue to be reported in June.

3. Normal service has probably been restored on the important rail LOCs in North Vietnam. Sufficient time has elapsed for the temporary repair or bypass of the Hai Duong, Bac Giang, and Phu Ly bridges in order to restore through rail service on the Hanoi-Haiphong and Hanoi - Dong Dang railroad lines and on the Hanoi-Vinh line as far south as Thanh Hoa. Rail shuttle service apparently is being used between Thanh Hoa and Vinh. Interdiction of the Hanoi - Lao Cai railroad line has been less frequent during the past few weeks and the line probably is currently open for through traffic. All bridges known to have been destroyed on this line have been restored for rail service. Strikes on 2 June destroyed a bypass bridge at Cao Nung on the Hanoi - Dong Dang line, but the original bridge remains open to through traffic. Air strikes against the Thai Nguyen railroad yard have disrupted traffic in the area for only short periods of time. Strikes on rolling stock

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resulted in 101 freight cars reported destroyed and 70 damaged out of a total of 190 sighted. Two locomotives were sighted but were not damaged. These results, added to those of previous armed reconnaissance missions, indicate that eight locomotives and 368 freight cars have been destroyed and six locomotives and 670 freight cars have been damaged. This would leave the North Vietnamese with an estimated inventory of about 1,300 freight cars and 120 locomotives.

4. Accelerated operations against waterway craft resulted in a new record of craft struck for the second successive month. A total of 1,164 craft were struck, of which 471 were reported sunk and 693 damaged; significant increases were noted in the number of secondary explosions and oil slicks. Initial strikes were made against craft on 20 waterway routes north of the 21st parallel. The heaviest strikes, however, were directed against the waterways between Vinh and Thanh Hoa, resulting in fewer craft being noted in early June and indicating the probable use of the routes at night. Although no JCS-targeted waterway facilities were struck during the month, repeated strikes were made against transshipment facilities at Phat Diem and Thai Binh.

5. As in the case of inland waterways, no JCS-targeted maritime port facilities were attacked, but storage facilities at the Nam Dinh coastal transshipment point were struck on 31 May with destruction and damage reported. Cargo continues to move along coastal routes in junks and barges. Many such craft navigate close inshore, seeking shelter in small anchorages along the coast during daylight hours and moving only at night.

6. The North Vietnamese have continued their restoration and construction work on the LOCs at high levels and they retain the capability of meeting their logistic requirements for operations in Laos and South Vietnam. Similarly, their military transport capabilities within NVN do not appear to have been substantially reduced. Although the capacity to move supplies by trucks has not been appreciably reduced during this period, it has become more difficult to move supplies and more costly to

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maintain the LOCs because of the extensive strikes on bridges, ferries, and fords.

7. North Vietnamese MIG reactions to US air strikes continued during the early part of May, but the only significant reaction subsequent to 10 May occurred on 13 June, indicating that NVN was either unprepared or unwilling to continue the high level of engagements established in late April.

8. Although some of the air strikes against radar equipment and sites, antiaircraft artillery, and the SA-2 missile systems have caused equipment losses, there has been a growth in the NVN air defense systems. This growth, coupled with constant redeployment, precludes a precise evaluation of the effectiveness of our air strikes against this equipment. Electronic countermeasures (ECM) operations in support of air strikes have been effective against early warning and antiaircraft fire control radars.

9. Cumulative totals of damaged and destroyed targets are given in the annex.

Leadership and Public Reactions

10. The continuing US air strikes against North Vietnam still do not appear to have had a serious effect on the NVN leadership's resolve to press on with the war. Hanoi propaganda on the bombing has continued to discount the possibility that the strikes might have a debilitating effect on popular morale. In a series of articles and broadcasts in the past several weeks, for example, regime spokesmen attempted to discount the hardships incurred by the people in the raids, and at the same time to stir up popular enthusiasm for the anti-US war effort by pointing to the crimes of the American "aggressors" and the victories of the Vietnamese people.

11. The most recent example of this propaganda theme came in a 5 June commentary in the party daily, which charged that the "barbarous escalation" of the war by the US was being directed against populated areas and economic establishments. It claimed that these efforts "in iron and steel" could not shake the fighting spirit of the Vietnamese people nor

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"could the destruction of economic establishments cause them to lose their morale."

12. Outside of propaganda, there are continuing indications [redacted]

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[redacted] and occasional statements by NVN spokesmen that popular will to resist is holding up rather well in spite of growing hardships. In early June, a NVN official in Iraq admitted that North Vietnam's economy was suffering because of the bombings but he insisted that in spite of considerable bomb damage, the morale of the people remained high and their efforts to rectify the damage were enthusiastic.

Effects on the Economy

13. The cumulative effects of the bombing are proving increasingly detrimental to the performance of the North Vietnamese economy despite the restriction of US/GVN air strikes to targets of relatively limited economic significance and value. Unusually large amounts of economic resources have been and are being channeled into construction and maintenance in the transportation system, which has been subjected to restrained but persistent air strikes. The diversion of large amounts of investment and labor to this sector and other war-associated tasks undoubtedly contributed significantly to the lower rates of growth shown by agriculture and industry in 1965 relative to 1964, and to the poor prospects for the spring rice crop in 1966. Investment in transportation is planned to have priority again in 1966, with considerable emphasis being given to the development of inland water transport. Total investment is now planned to increase by about 30 percent over 1965 to \$353 million. If increased amounts are allocated to transport, however, there is little prospect for much growth in industry and agriculture during 1966.

14. The agricultural sector of the economy in particular appears to be adversely affected by the reallocation of resources. The NVN regime is just maintaining inputs of capital to the agricultural sector--investment in 1965 apparently only approximated that in 1964. Further, there are indications

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that the number of young workers who normally enter the agricultural labor force each year (about 150,000) is being largely offset by the shift of agricultural manpower to work on transportation routes and to military service. Other problems in agriculture brought by the war include disruptions of the normal farming schedules, interruption of the electrically powered irrigation systems, and interruptions in the production and distribution of chemical fertilizers. These problems, in addition to the chronically undependable weather, have led to an exhortation to agricultural workers to increase the number of days worked from the old norm of 200 to between 250 and 360 in 1966.

15. Only 48,600 tons of coal were shipped from North Vietnam by sea in May, less than 40 percent of the average monthly volume of 127,100 tons exported in the first three months of this year. Damage inflicted upon coal processing and loading facilities at Cam Pha by air strikes in mid-April probably was the main cause of the reduced exports, although loading operations were also hindered by occasional power failures that may have been caused by strikes against neighboring targets. Apatite shipments have not been noted since August 1965. Cement exports were down considerably in May compared with the average monthly rate for the preceding three months.

16. Direct losses caused by air strikes to economic and military facilities and equipment measured in terms of estimated reconstruction or replacement cost are now estimated at some \$72 million as indicated in the tabulations on the following page.

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Economic Facilities and Equipment

<u>Targets</u>	<u>Million Dollars</u>
Railroad/Highway Bridges*	
Reconstruction	11.7
Temporary Repairs	2.8**
Transportation Equipment	11.5***
Railroad Yards and Ports	1.0
Electric Power Plants	6.3
Petroleum Storage Facilities	0.7
Manufacturing Facilities	1.5
 Total	 35.5

Military Facilities and Equipment

<u>Targets</u>	<u>Million Dollars</u>
Barracks	16.1
Ammunition Storage	4.5
Supply Depots	3.1
Radar and Communications	1.1
Naval Bases	0.8
SAM Sites	0.7
Aircraft	8.8
Airfields	0.4
Miscellaneous Targets of Armed Reconnaissance	0.9
 Total	 36.4

* The estimate in this category is incomplete because of inadequate poststrike photography.

** Includes \$1.9 million expended to date on temporary repairs for structures damaged but not yet restored to operable condition.

*** Excludes destruction and damage to trucks in Laos.

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17. Measurable indirect losses amount to about \$11.5 million made up principally of losses of foreign exchange earnings of \$8.0 million and losses in the 1966 fall rice crop of \$3.5 million. In addition to these measurable indirect losses, there are many other losses and costs to the economy and the military establishment which have developed as a consequence of air strikes but which cannot be assigned values. These would include the loss of production and the lower productivity of labor resulting from the dispersal of industry, time lost from work as a consequence of civil defense measures, and loss of production caused by temporary shortages of electric power. In the military establishment are the costs of construction of new facilities, replacement of equipment, and increased operating costs. There are also the costs of stockpiling large quantities of construction materials in many parts of the country and the added costs of distribution resulting from the air strikes on transportation.

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ANNEX

RESULTS OF STRIKES ON NORTH VIETNAMESE TARGETS ^{a/}
THROUGH 13 JUNE 1966

	Targets Struck		No. of Attacks	Strike Sorties ^{c/}	Percent of Nat'l Capacity	
	No.	% ^{b/}			Destroyed	Inactive ^{d/}
<u>Fixed Targets</u>						
Barracks	44	23	194	2,439	14.87	5.56
Ammo Depots	13	75.7	51	1,143	35.67	37.51
POL Storage	4	19.4	13	146	17.6	
Supply Depots	17	19	50	599	10	2
Power Plants	6	27.5	25	238	27.5	
Maritime Ports	5	28	17	219	10.37	2.63
RR Yards	2	19	14	111	9.3	
Explosive Plant	1	100	3	28	71	
Airfields	4		12	359		
Naval Bases	2		15	196		
Bridges	45		162 ^{e/}	2,251		
Commo Install	2		2	15		
Radar Sites	13		60 ^{e/}	385		
SAM Sites	24		39	263		
Locks & Dams	2		2	10		
Ferries	11		7 ^{e/}	44		
Total Sorties				8,446		
Total Armed Recce Sorties				34,286		
Results of Armed Recce Sorties				<u>Destroyed</u>	<u>Damaged</u>	
Vessels				1,574	2,623	
Vehicles				853	874	
RR Stock				605	947	

- ^{a/} Assessments are based on best information received; will be refined as more accurate information becomes available.
^{b/} Percentages of national capacity where appropriate.
^{c/} Strike plus flak suppression sorties.
^{d/} Percent inactive due to dismantling or abandonment of facilities as a result of air strikes.
^{e/} Also numerous attacks during armed recce and other missions.

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